Claims

What is claimed is:

1. An aesthetically acceptable toothbrush manufactured from preformed components comprising:

the toothbrush formed from at least two preformed toothbrush components, which are welded together to form a toothbrush having acceptable peel resistant strength; said preformed toothbrush components being selected from the group consisting of at least a part of a head, a neck and a handle, and combinations thereof.

2. The toothbrush of claim 1, wherein said weld has a break strength to withstand a peel force of at least 15 in-lbs. (1.69 joules).

3. The toothbrush of claim 1, wherein said weld has a break strength to withstand a peel force of at least 18 in-lbs. (2.03 joules).

4. The toothbrush of claim 1, wherein said weld has a break strength to withstand a peel force of at least 20 in-lbs. (2.26 joules).

5. The toothbrush of claim 1, wherein said at least one of said components is elastomeric.

6. The toothbrush of claim 1, wherein a head and a handle are welded by heating each respective component with hot air.

7. The toothbrush of claim 1, wherein three preformed components or parts thereof are welded together to form said toothbrush.

8. The toothbrush of claim 7, wherein at least one of said preformed components is elastomeric.

9. An aesthetically acceptable toothbrush manufactured from preformed components comprising:

the toothbrush formed from at least two preformed toothbrush components, which are welded together to form a toothbrush; said preformed toothbrush components being selected from the group consisting of at least a part of a head, a neck and a handle, and combinations thereof, wherein said components are of different thermoplastic materials having melt flow rates which differ by more than 5 g/10 min.

10. The toothbrush of claim 9, wherein at least one of said components is elastomeric.

11. A process welding preformed thermoplastic toothbrush components to form a toothbrush, the process comprising,

(a) heating, with a hot gas, the ends of two or more preformed toothbrush components, which components are selected from the group consisting of at least a part of a head, a neck and a handle or combinations thereof, until at least a portion of each of said ends melts;

(b) joining said ends together within a mold having the desired shape of that respective section of said toothbrush;

(c) cooling said joined ends to complete the desired welding.

12. The hot gas welding process of claim 11, wherein the hot gas is applied from a single source to the end of each component to be joined.

13. The hot gas welding process of claim 11, wherein the hot gas is applied to the end of each component to be joined from a different hot gas source.

14. The hot gas welding process of claim 13, wherein the preformed toothbrush components are of materials which differ in melt flow rates by at least 5 g/10 min.

15. The gas welding process of claims 11, 12, 13, and 14 in which the hot gas is selected from the group consisting of air, carbon dioxide, nitrogen, neon and argon and combinations thereof.

16. The hot gas welding process of claim 11, wherein said toothbrush head and/or neck component or components may be a thermoplastic elastomeric material, selected from the group consisting of styrene-butadiene-styrene, styrene-isoprenestyrene, thermoplastic polyurethane and thermoplastic vulcanate materials.

17. The hot air welding process of claim 11, wherein the welded components are welded with a break strength to withstand a peel force of at least 18 in-lbs. (2.03 joules).

18. The hot gas welding process of claim 11, wherein said ends of the said toothbrush components to be welded are chamfered to form a scarf joint when welded one to the other.

19. The hot gas welding process of claim 11, wherein one of ends of the toothbrush components to be welded has a build-up of material central thereof and the end of said second component has a hole therein.

20. The hot gas welding process of claim 11, wherein said hot gas is applied to said toothbrush component ends at a temperature of from 200 to 450 degrees Celcius.

21. The hot gas welding process of claim 20, wherein said temperature is from 300 to 400 degrees Celcius.

22. The hot gas welding process of claim 11, wherein said hot gas if applied to said ends of the components to be welded together from said hot gas source at a flow rate of 2 to 30 m/sec.

23. The hot gas welding process of claim 11, wherein said hot gas is applied to said ends of the components to be welded together from said at least one hot gas source which is located from 2 to 10 mm from said ends.

24. The hot gas welding process of claim 11, wherein said hot gas is applied to said ends of the components to be welded together from said at least one hot gas source which source has an oval nozzle, with a larger diameter of from 2 to 10 mm.

25. The hot gas welding process of claim 11, wherein the ends of the components being welded are pressed together with a force of at least 4 bar within said mold which compresses said ends with a force of at least 4 bar.